

The LINC logo features a stylized, abstract shape composed of three curved, overlapping bands in dark blue, red, and yellow, resembling a flame or a dynamic motion. The letters "LINC" are positioned to the right of this graphic.

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Size matters:

Experimental study on the effect of oversizing during tibial PTA

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The logo for Universitätsklinikum Leipzig, consisting of a stylized blue 'U' shape with a white swoosh.

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Disclosure

Speaker name:

O. J. Bakker.....

I do not have any potential conflict of interest

Introduction

- EVT of tibial arteries fail to show durable results
- The major reason: Tibials differ from coronaries...
- For example, in tibial vessels \pm 16x amount of elastin/fibrin/calcium compared to coronaries¹

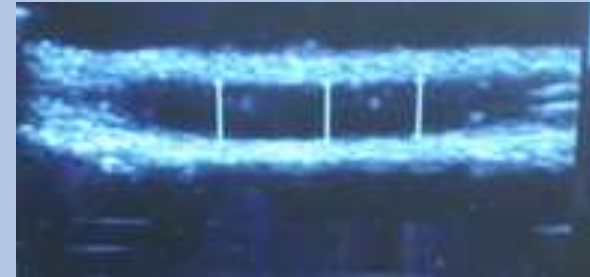


How do you treat vessels like this?



Introduction

- In the tibials, large discrepancy between angiography and actual vessel diameter¹
- Stop undersizing during PTA in the tibials²
- The bigger the better?
- Crack & Pave like the SFA?³
- Oversizing of over 10% to 30% may result in vessel damage, mainly in the form of dissections^{4,5}



Study question

- *What is the effect of balloon oversizing on arterial wall integrity in calcified and non-calcified tibial arteries?*

Methods (1)

- - porcine carotid arteries
- - 18 tibial arteries from cadavers, with varying vascular status



Methods (2)

- 4 cm segments, placed under 125% prestretch
- Pressurized 160 cmH₂O (117 mmHg) with phosphate buffered saline
- Before and after dilation measurement using 7.5 MHz linear ultrasound probe
- Samples for histology



Methods (3)

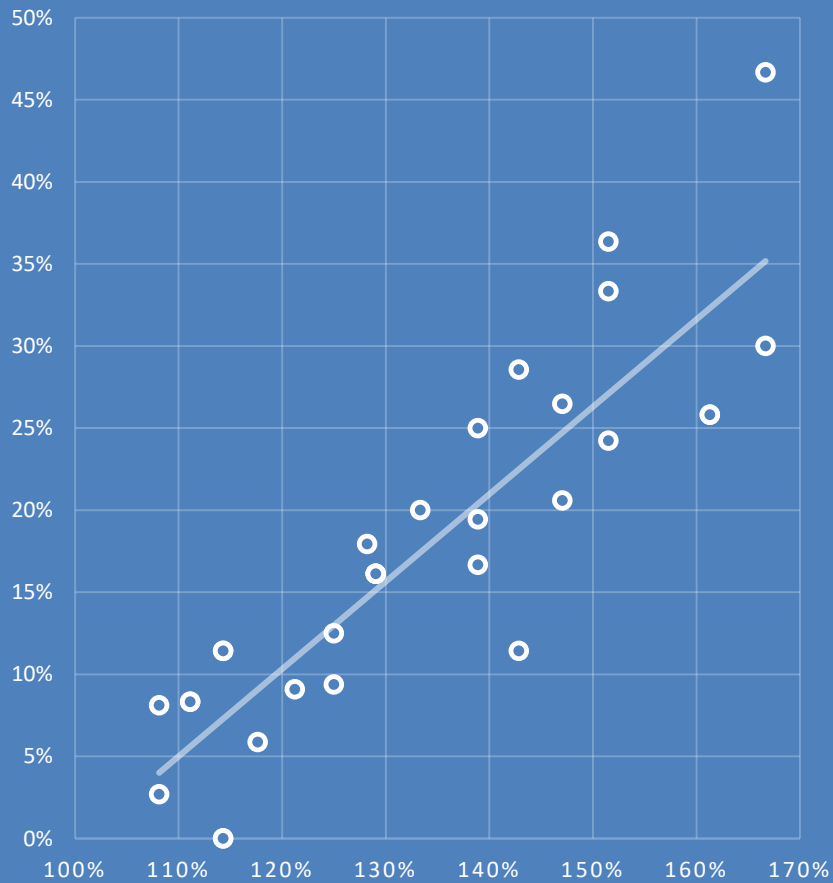
- Oversizing ranging from 25% to 135%
- For example,
4 mm balloon in 2 mm vessel = 100% oversized



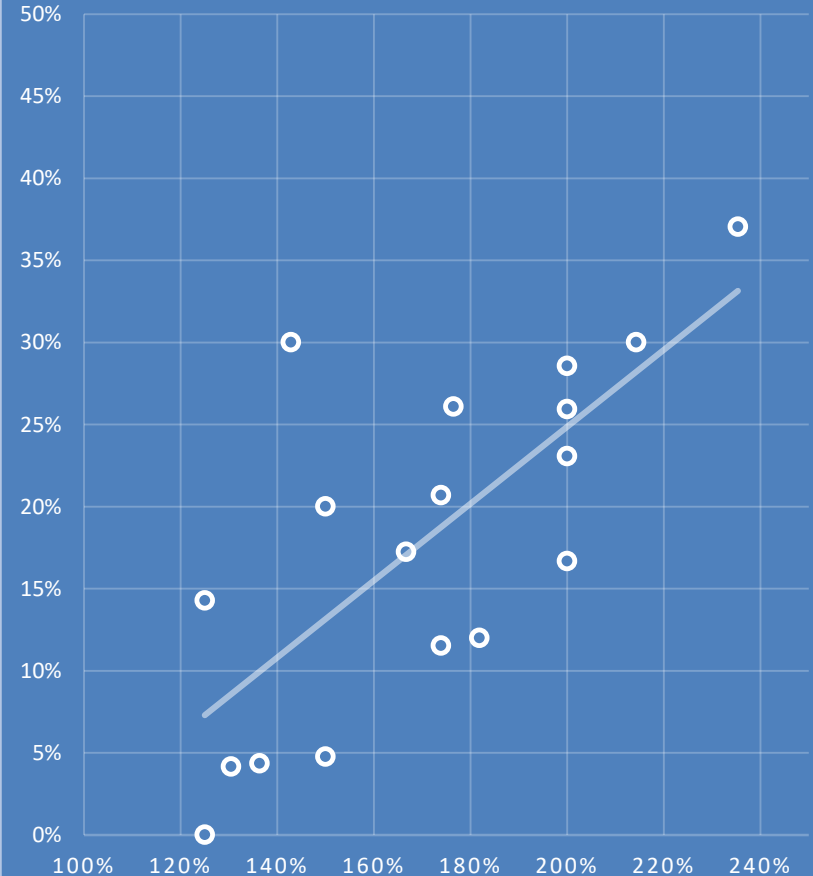
Results:

Larger balloons lead to larger lumen diameters

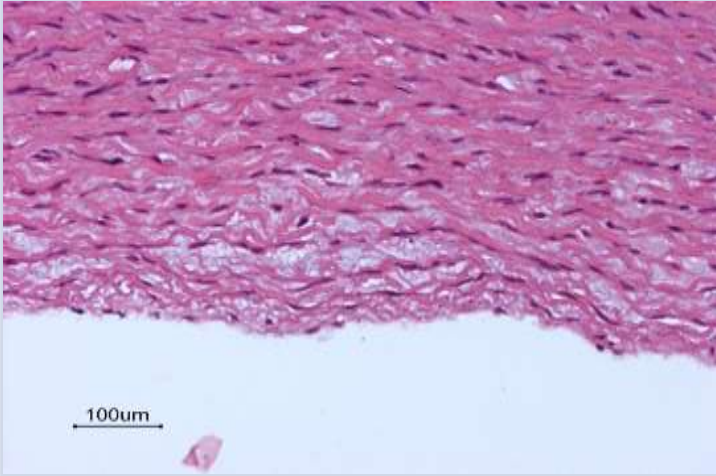
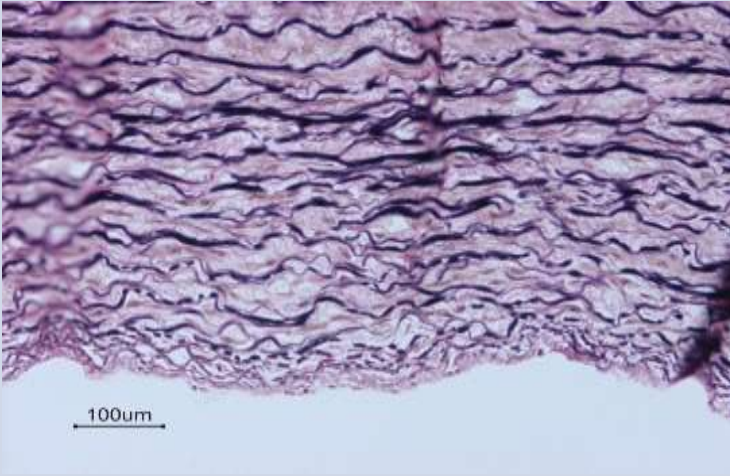
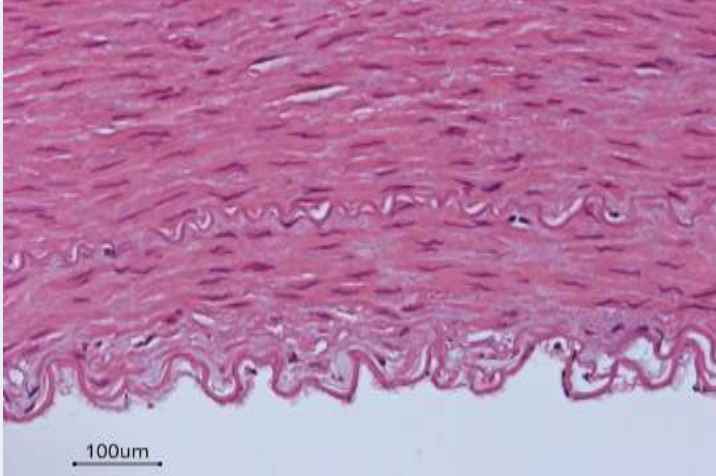
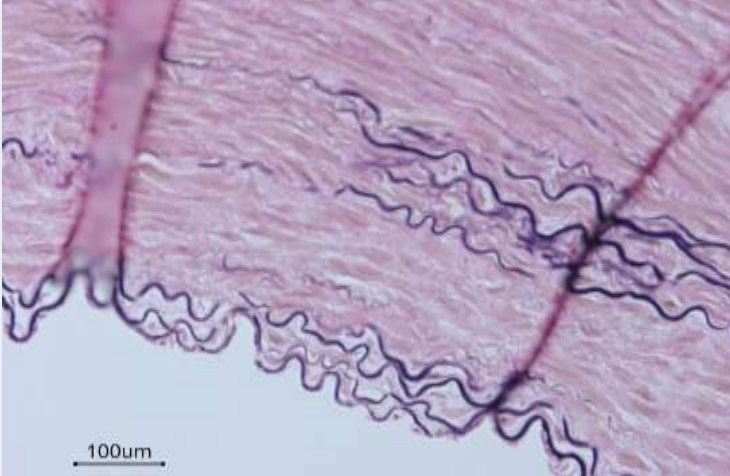
PORCINE CAROTID ARTERIES




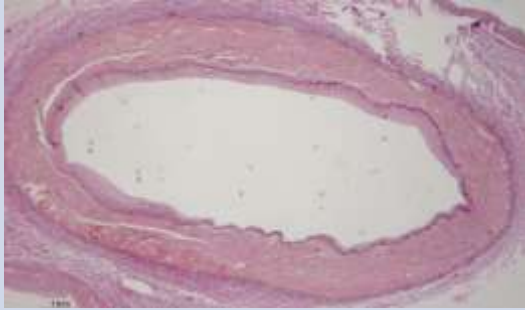

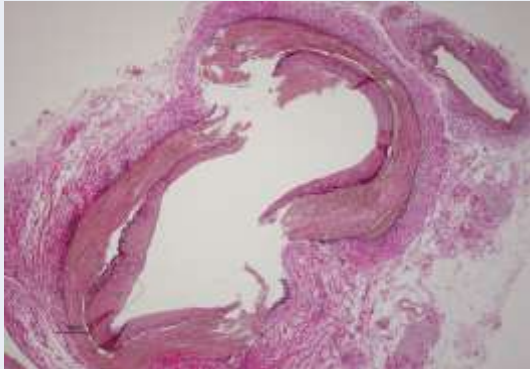

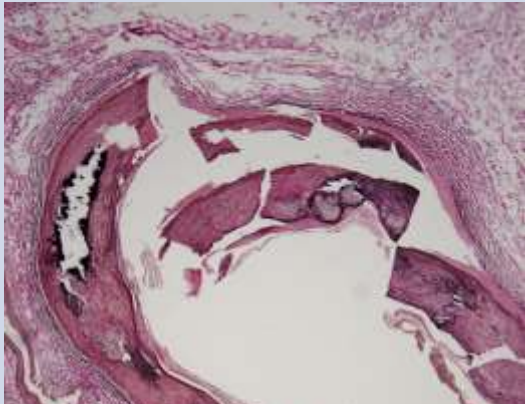
HUMAN TIBIAL ARTERIES



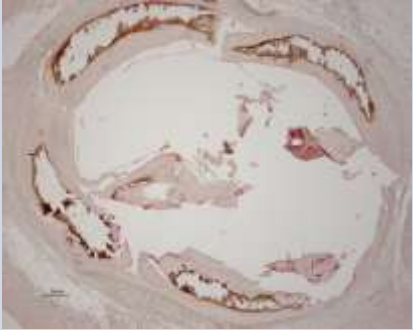

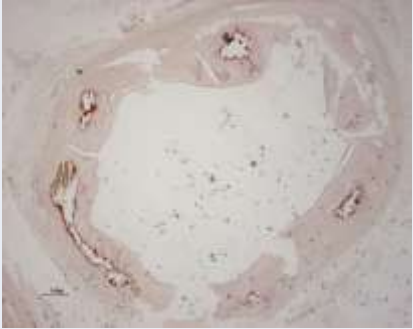

Porcine carotid arteries

	Hematoxylin and Eosin	Elastica van Gieson
Control		
29%		





Oversizing in mild calcified tibials

	Van Kossa	Elastica van Gieson
Control Per		
25% ATA 3 vs 2.4		
67% ATP 4 vs 2.4		

Oversizing in calcified tibials

	Van Kossa	Elastica van Gieson
50% ATA 3 vs 2		
75% ATA 4 vs 2.3		

Oversizing in calcified tibials

	Van Kossa	Elastica van Gieson
100% 4 vs 2mm ATA		
100% 4 vs 2mm ATA		

Summary

- Balloon oversizing will result in larger diameters
- However.....
- Effect of oversizing depends on vessel wall composition
- Amount and composition of “calcium” will determine effect of oversizing

Limitations

- No CTOs used, only stenotic vessels
- No data on intima hyperplasia after oversizing
- No clinical data to correlate our findings

Conclusion

- Oversizing in tibials....
- No calcium: dissections occur after limited oversizing
- With calcium deposits: dissections occur with moderate oversizing
- with circular calcium: we need to oversize to gain lumen

Thank you

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-Olaf Bakker

-Frans Moll

-Andrej Schmidt

-Rutger Welling

-Gert Jan de Borst

-Dierk Scheinert

Results (2)

Human tibial arteries

	3 mm	4 mm
Anterior tibial artery	n = 4	n = 7
Posterior tibial artery	n = 2	n = 2
Peroneal artery	n = 3	
Major macroscopic calcifications	n = 6	n = 4
Mean predilation luminal diameter (mm)	2.1 mm	2.1 mm
Mean postdilation luminal diameter (mm)	2.4 mm	2.7 mm

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